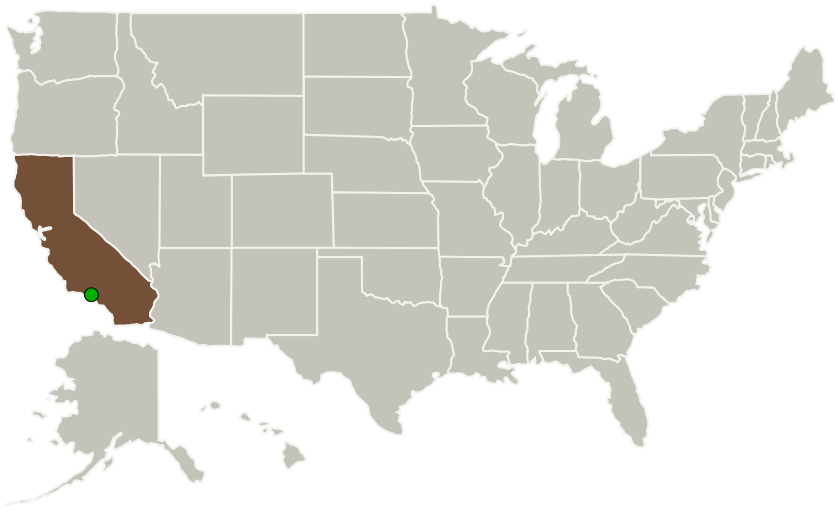
Miniaturized, Multi-Analyte Sensor Array for the Automated Monitoring of Major Atmospheric Constituents in Spacecraft Environment, Phase II

Completed Technology Project (2010 - 2012)

Project Introduction

The objective of the Phase II SBIR project is to develop a prototype sensor system to detect gaseous analytes in support of the spacecraft environmental monitoring and control system. InnoSense LLC (ISL) has utilized its Chemical Fingerprint§ sensor array fabrication technology in Phase I to establish the feasibility of a miniature device with multi-analyte detection capability. In particular, we have detected oxygen, carbon dioxide and humidity as potential target analytes. The oxygen sensor performed over 3-45% concentrations under a variable pressure of 8-14.7 psia. The Phase I working model could generated discernible signal with 0.1% O2 concentration. Upon fine-tuning the indicators in Phase II, the system performance will be tested with a prototype hardware that will also be developed in Phase II. ISL has received technology endorsement letter from a prime contractor in the NASA application area. ISL has also secured Phase III follow-on funding commitment from a commercialization partner. For assuring success of this project, ISL has assembled a technical team with a cumulative 100 person-years of experience in developing commercially viable sensor systems.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Innosense, LLC	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB), Women-Owned Small Business (WOSB)	Torrance, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations
California

Project Transitions

January 2010: Project Start

January 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139241)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Innosense, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

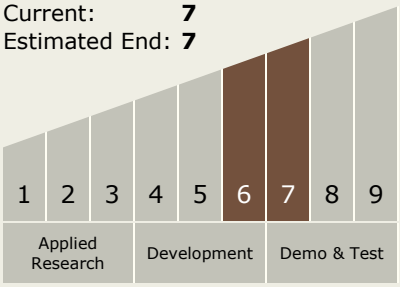
Carlos Torrez

Principal Investigator:

Uma Sampathkumaran

Technology Maturity (TRL)

Start: **6**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.4 Environmental Monitoring, Safety, and Emergency Response
    - TX06.4.3 Protective Clothing and Breathing

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System